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- ISO 19115
- Metadata information (MD_Metadata)
 - Identification information (MD_Identification)
 - Constraint information (MD_Constraints)
 - Data Quality (DQ_DataQuality)
 - Lineage information (LI_Lineage)
 - Maintenance information (MD_MaintenanceInformation)
 - Spatial representation information (MD_SpatialRepresentation)
 - Reference system information (MD_ReferenceSystem)
 - Content information (MD_ContentInformation)
 - Portrayal catalogue information (MD_PortrayalCatalogueReference)
 - Distribution information (MD_Distribution)
 - Metadata extension information (MD_MetadataExtensionInformation)
 - Application schema information (MD_ApplicationSchemaInformation)
 - Service metadata information
 - Extent information (EX_Extent)
 - Citation and responsible party information (CI_Citation and CI_ResponsibleParty) classes

ISO 19115

Technical Committee 211 of the International Standards Organization (ISO) has defined a [series of standards](#) for geographic metadata and services. Many of these standards are closely related to and compatible with OGC Standards. These standards are currently being adopted across the NASA Earth Science community and by many partners in the U.S. and around the world.

ISO 19115 is the primary metadata standard in the ISO TC211 Collection. The objective of ISO 19115 is to provide a structure for describing digital geographic data. It defines metadata elements, provides a schema (ISO 19139) and establishes a common set of metadata terminology, definitions, and extension procedures. It provides information about the identification, the extent, the quality, the spatial and temporal schema, spatial reference, and distribution of digital geographic data.

ISO 19115 defines:

- mandatory and conditional metadata sections, metadata entities, and metadata elements;
- the minimum set of metadata required to serve the full range of metadata applications (data discovery, determining data fitness for use, data access, data transfer, and use of digital data);
- optional metadata elements – to allow for a more extensive standard description of geographic data, if required;
- a method for extending metadata to fit specialized needs.

Metadata information (MD_Metadata)

The MD_Metadata package defines the schema for describing the complete metadata about a resource (DS_Resource) and metadata about the metadata itself.

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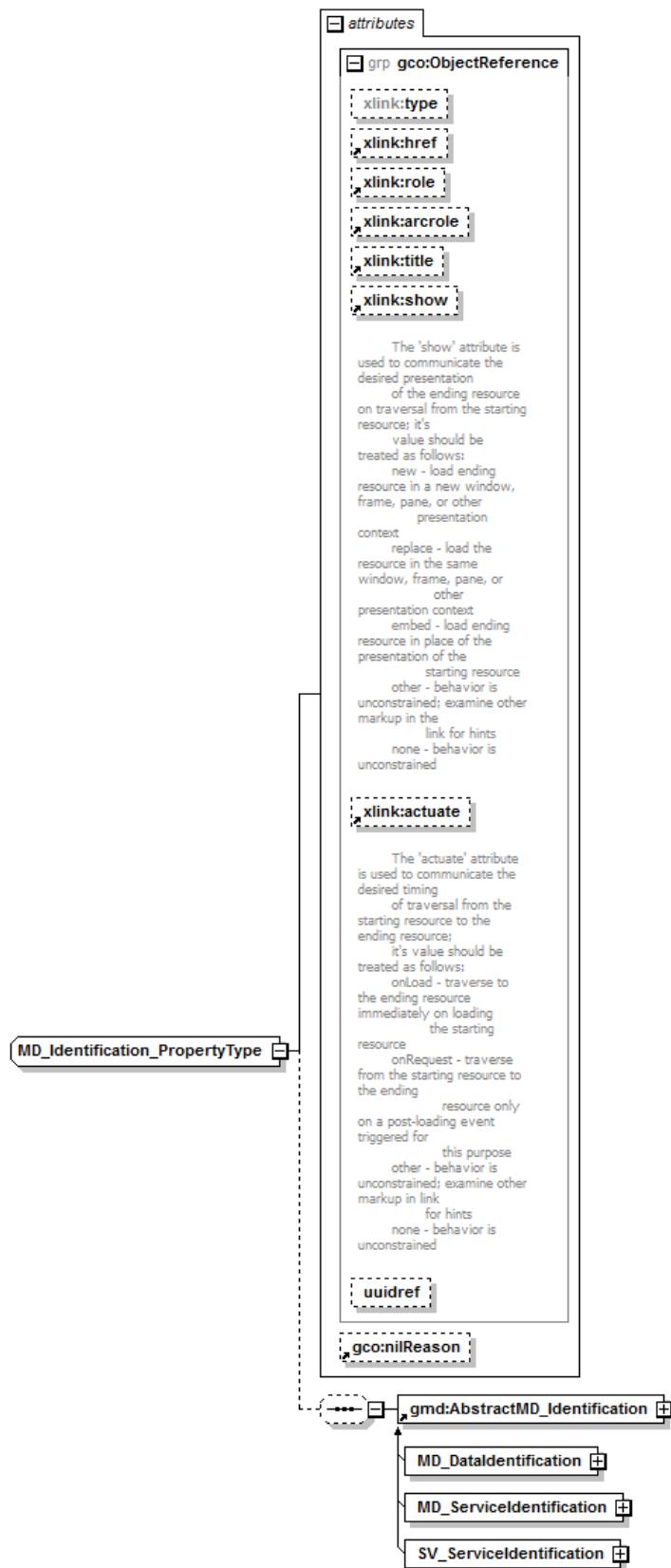
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Identification information (MD_Identification)

Identification information supports the provision of information to uniquely identify a resource. MD_Identification can be specified as MD_DataIdentification or SV_ServiceIdentification and is an aggregate of eight classes of metadata which aid in resource identification.

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diagram	
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namespace	http://www.isotc211.org/2005/gmd					
children	gmd:AbstractMD_Identification					
used by	element MD_Metadata_Type/identificationInfo					
	Name	Type	Use	Default	Fixed	Annotation

	attributes	<p>xlink:type xs:string</p> <p>xlink:href xs:anyURI optional</p> <p>xlink:role xs:anyURI optional</p> <p>xlink:arcrole xs:anyURI optional</p> <p>xlink:title xs:string optional</p> <p>xlink:show derived by: xs:string optional</p> <p>xlink:actuate derived by: xs:string optional</p> <p>uidref xs:string</p> <p>gco:nilReason gml:NilReasonType</p>	simple
	source	<pre><xs:complexType name="MD_Identification_PropertyType"> <xs:sequence minOccurs="0"> <xs:element ref="gmd:AbstractMD_Identification"/> </xs:sequence> <xs:attributeGroup ref="gco:ObjectReference"/> <xs:attribute ref="gco:nilReason"/> </xs:complexType></pre>	

Constraint information (MD_Constraints)

This package supports the provision of metadata concerning the legal and security constraints placed on resources. It consists of MD_Constraints which can be specified as MD_LegalConstraints and/or MD_SecurityConstraints.

▼ Click here to expand...

diagram	<pre> classDiagram class MD_Constraints_Type { <<Restrictions on the access and use of a dataset or metadata>> } class gco { class AbstractObject_Type { <<extension>> class attributes { id uuid } } } MD_Constraints_Type "1" -- "0..1" gco::useLimitation </pre>																		
namespace	http://www.isotc211.org/2005/gmd																		
type	extension of gco:AbstractObject_Type																		
properties	base gco:AbstractObject_Type																		
children	gmd:useLimitation																		
used by	element MD_Constraints complexTypes MD_LegalConstraints_Type MD_SecurityConstraints_Type																		
attributes	<table> <thead> <tr> <th>Name</th> <th>Type</th> <th>Use</th> <th>Default</th> <th>Fixed</th> <th>Annotation</th> </tr> </thead> <tbody> <tr> <td>id</td> <td>xs:ID</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>uuid</td> <td>xs:string</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Name	Type	Use	Default	Fixed	Annotation	id	xs:ID					uuid	xs:string				
Name	Type	Use	Default	Fixed	Annotation														
id	xs:ID																		
uuid	xs:string																		
annotation	documentation Restrictions on the access and use of a dataset or metadata																		
source	<pre><xs:complexType name="MD_Constraints_Type"> <xs:annotation></pre>																		

	<pre> <xs:documentation>Restrictions on the access and use of a dataset or metadata</xs:documentation> </xs:annotation> <xs:complexContent> <xs:extension base="gco:AbstractObject_Type"> <xs:sequence> <xs:element name="useLimitation" type="gco:CharacterString_PropertyType" minOccurs="0" maxOccurs="unbounded"/> </xs:sequence> </xs:extension> <xs:complexContent> </xs:complexType> </pre>
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Data Quality (DQ_DataQuality)

For more detailed information, see the page on ISO 19157.

▼ [Click here to expand...](#)

Lineage information (LI_Lineage)

This package supports the provision of metadata concerning the sources and production processes used in producing a resource. The DQ_DataQuality class is defined in ISO 19157. LI_Lineage is defined in 19157 while LE_Lineage is defined in 19115-2.

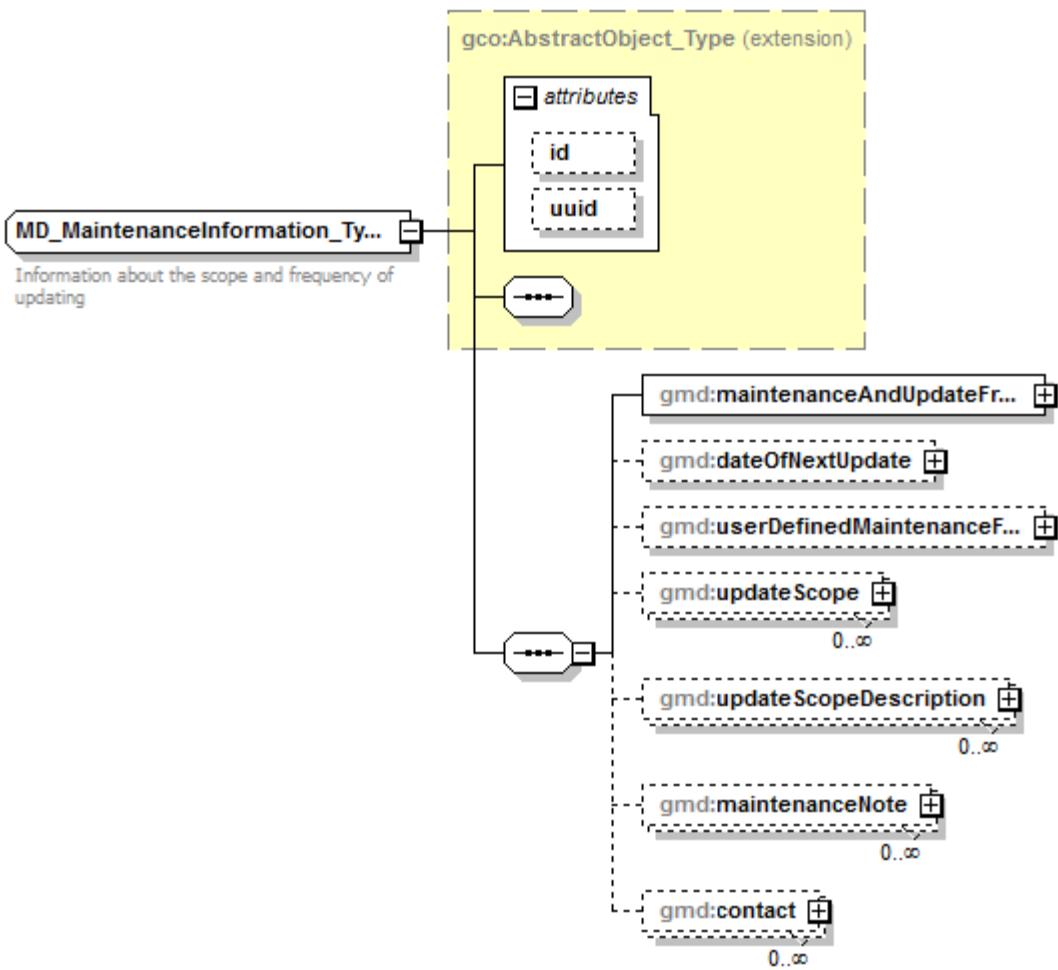
▼ [Click here to expand...](#)

Maintenance information (MD_MaintenanceInformation)

This package supports the provision of metadata related to the scope and frequency of maintenance for a resource.

▼ [Click here to expand...](#)

diagram	
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namespace	http://www.isotc211.org/2005/gmd					
type	extension of gco:AbstractObject_Type					
properties	base gco:AbstractObject_Type					
children	gmd:maintenanceAndUpdateFrequency gmd:dateOfNextUpdate gmd:userDefinedMaintenanceFrequency gmd:updateScope gmd:updateScopeDescription gmd:maintenanceNote gmd:contact					
used by	element MD MaintenanceInformation					
attributes	Name	Type	Use	Default	Fixed	Annotation
	id	xs:ID				
	uuid	xs:string				
annotation	documentation Information about the scope and frequency of updating					
source	<pre> <xs:complexType name="MD_MaintenanceInformation_Type"> <xs:annotation> <xs:documentation>Information about the scope and frequency of updating</xs:documentation> </xs:annotation> <xs:complexContent> <xs:extension base="gco:AbstractObject_Type"> <xs:sequence> <xs:element name="maintenanceAndUpdateFrequency" type="gmd:MD_MaintenanceFrequencyCode_PropertyType"/> <xs:element name="dateOfNextUpdate" type="gco:Date_PropertyType" minOccurs="0"/> <xs:element name="userDefinedMaintenanceFrequency" type="gts:TM_PeriodDuration_PropertyType" minOccurs="0"/> <xs:element name="updateScope" type="gmd:MD_ScopeCode_PropertyType" minOccurs="0" maxO </pre>					

```

curs="unbounded"/>
  <xs:element name="updateScopeDescription" type="gmd:MD_ScopeDescription_PropertyType" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="maintenanceNote" type="gco:CharacterString_PropertyType" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element name="contact" type="gmd:CI_ResponsibleParty_PropertyType" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:extension>
</xs:complexContent>
</xs:complexType>

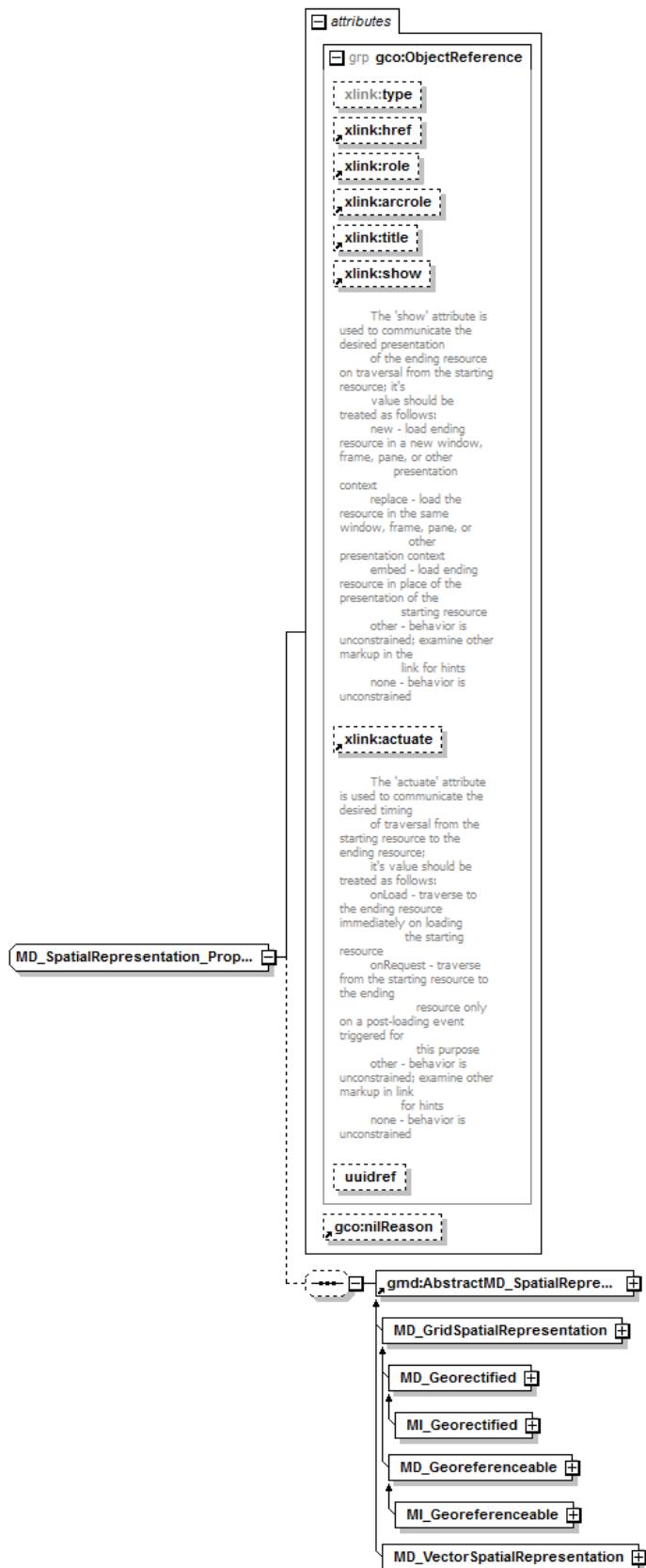
```

Spatial representation information (MD_SpatialRepresentation)

This package supports the provision of metadata identifying the spatial primitives used by a resource; the mechanisms used to model real world phenomena in a digital information system. It consists of the MD_SpatialRepresentation which can be specified as either MD_VectorSpatialRepresentation or MD_GridSpatialRepresentation which can be further specified as MD_Georectified or MD_Georeferencable.

[Click here to expand...](#)

diagram	
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namespace	http://www.isotc211.org/2005/gmd
children	gmd:AbstractMD_SpatialRepresentation
used by	elements MD_Metadata Type/spatialRepresentationInfo OE_CoverageResult Type/resultSpatialRepresentation

	Name	Type	Use	Default	Fixed	Annotation
	xlink:type	xs:string				
	xlink:href	xs:anyURI	optional			
	xlink:role	xs:anyURI	optional			
	xlink:arcrole	xs:anyURI	optional			
	xlink:title	xs:string	optional			
	xlink:show	derived by: xs:string	optional			
	xlink:actuate	derived by: xs:string	optional			
	uidref	xs:string				
	gco:nilReason	gml:NilReasonType				
source	<pre><xs:complexType name="MD_SpatialRepresentation_PropertyType"> <xs:sequence minOccurs="0"> <xs:element ref="gmd:AbstractMD_SpatialRepresentation"/> </xs:sequence> <xs:attributeGroup ref="gco:ObjectReference"/> <xs:attribute ref="gco:nilReason"/> </xs:complexType></pre>					

Reference system information (MD_ReferenceSystem)

This package supports the metadata identifying the spatial and temporal reference system(s) used by a resource.

▼ Click here to expand...

element MD_ReferenceSystem

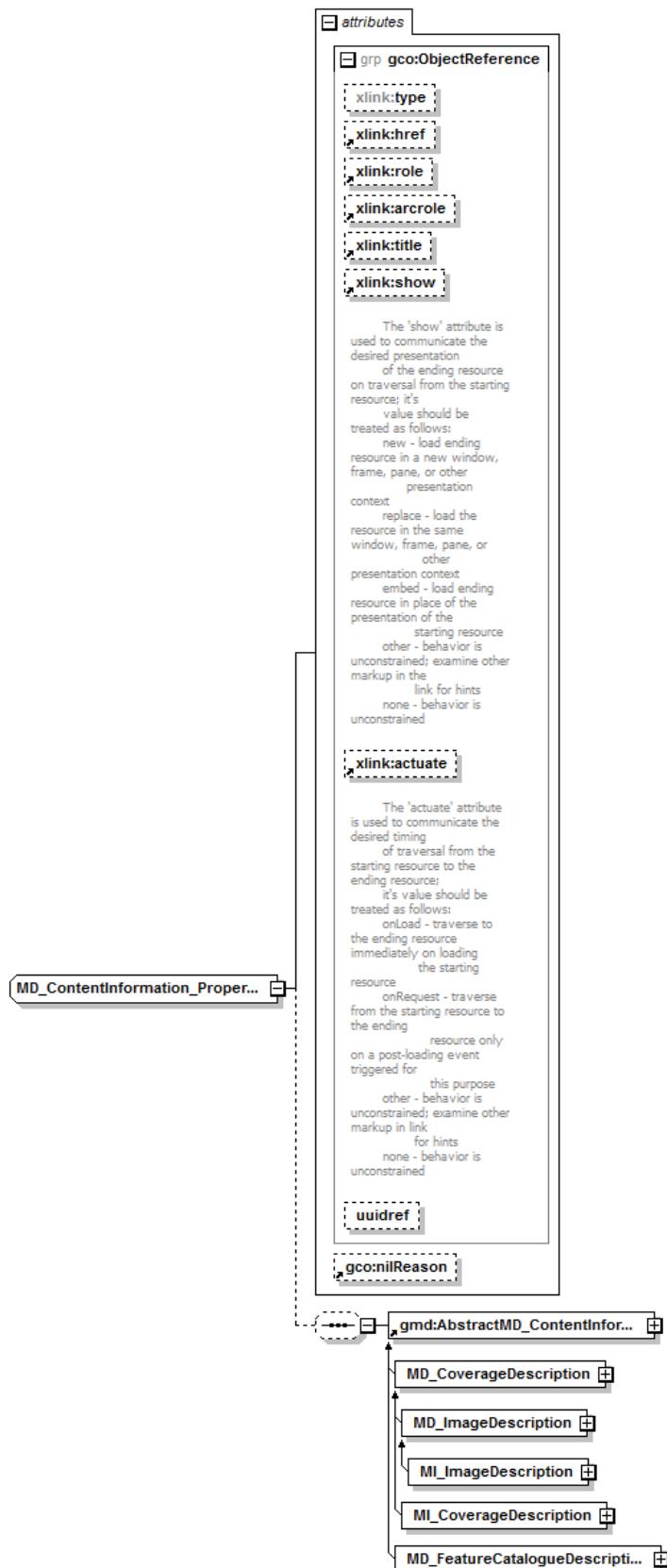
diagram	<pre> classDiagram class MD_ReferenceSystem class gmd:MD_ReferenceSystem_Type { attribute id attribute uuid reference gmd:referenceSystemIdentifier } MD_ReferenceSystem --> gmd:MD_ReferenceSystem_Type </pre>																		
namespace	http://www.isotc211.org/2005/gmd																		
type	gmd:MD_ReferenceSystem_Type																		
properties	content complex																		
children	gmd:referenceSystemIdentifier																		
used by	complexType MD_ReferenceSystem_PropertyType																		
attributes	<table border="1"> <thead> <tr> <th>Name</th> <th>Type</th> <th>Use</th> <th>Default</th> <th>Fixed</th> <th>Annotation</th> </tr> </thead> <tbody> <tr> <td>id</td><td>xs:ID</td><td></td><td></td><td></td><td></td></tr> <tr> <td>uuid</td><td>xs:string</td><td></td><td></td><td></td><td></td></tr> </tbody> </table>	Name	Type	Use	Default	Fixed	Annotation	id	xs:ID					uuid	xs:string				
Name	Type	Use	Default	Fixed	Annotation														
id	xs:ID																		
uuid	xs:string																		
source	<pre><xs:element name="MD_ReferenceSystem" type="gmd:MD_ReferenceSystem_Type"/></pre>																		

Content information (MD_ContentInformation)

This package supports the provision of metadata identifying the content of a resource by: citing the feature catalog used to define the content (MD_FeatureCatalogueDescription); incorporating the feature catalogue (MD_FeatureCatalogue – defined in ISO 19110); or describing the content of a coverage resource (MD_CoverageDescription) which also may be specified as MD_ImageDescription.

▼ [Click here to expand...](#)

diagram	
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namespace	http://www.isotc211.org/2005/gmd
children	gmd:AbstractMD_ContentInformation
used by	element MD_Metadata_Type/contentInfo

	Name	Type	Use	Default	Fixed	Annotation
	xlink:type	xs:string				
	xlink:href	xs:anyURI	optional			
	xlink:role	xs:anyURI	optional			
	xlink:arcrole	xs:anyURI	optional			
	xlink:title	xs:string	optional			
	xlink:show	derived by: xs:string	optional			
	xlink:actuate	derived by: xs:string	optional			
	uidref	xs:string				
	gco:nilReason	gml:NilReasonType				
source	<pre><xs:complexType name="MD_ContentInformation_PropertyType"> <xs:sequence minOccurs="0"> <xs:element ref="gmd:AbstractMD_ContentInformation"/> </xs:sequence> <xs:attributeGroup ref="gco:ObjectReference"/> <xs:attribute ref="gco:nilReason"/> </xs:complexType></pre>					

Portrayal catalogue information (MD_PortrayalCatalogueReference)

The portrayal catalogue describes how the resource can be rendered for human visualisation.

▼ Click here to expand...

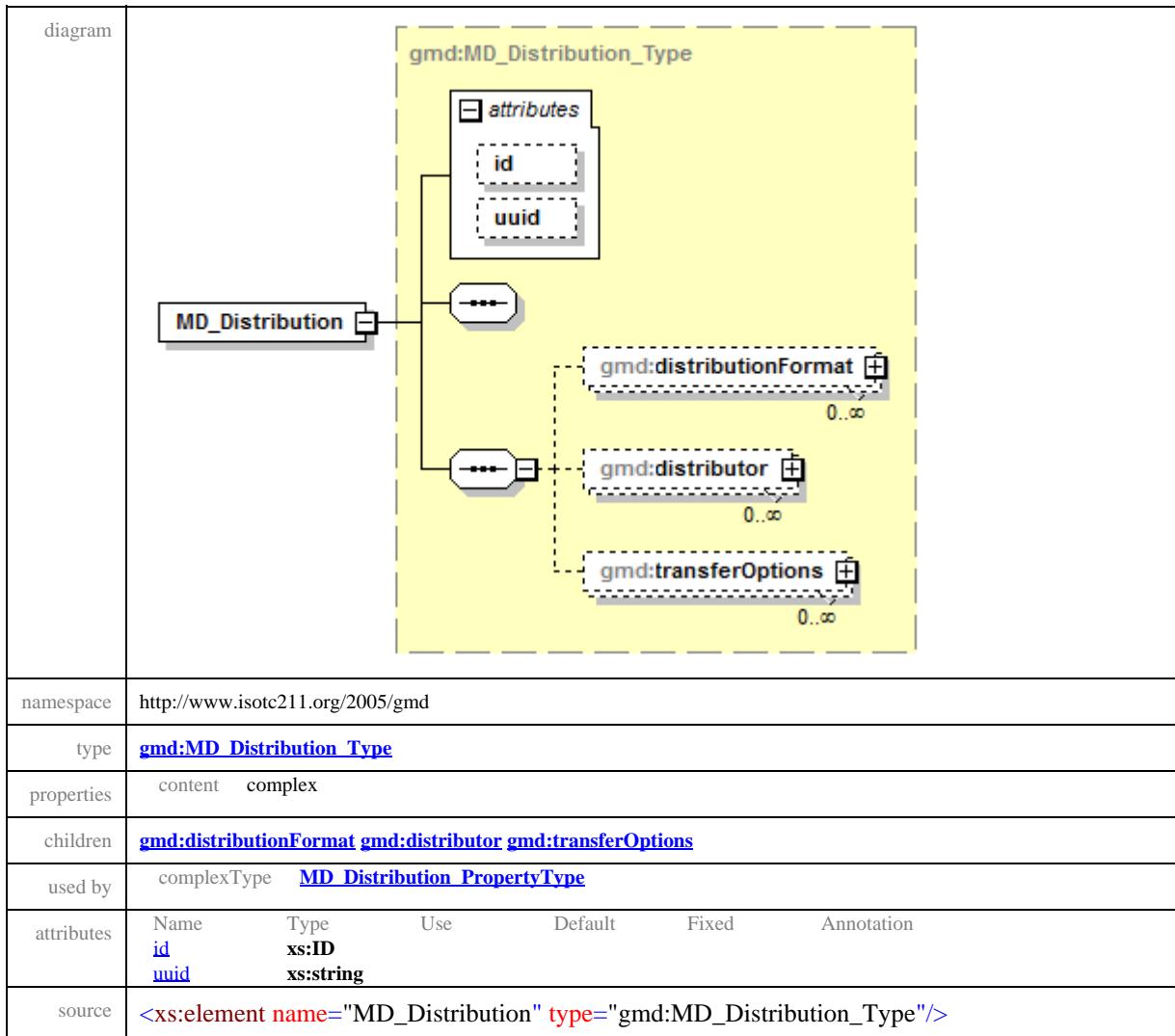
element MD_PortrayalCatalogueReference

diagram																			
namespace	http://www.isotc211.org/2005/gmd																		
type	gmd:MD_PortrayalCatalogueReference_Type																		
properties	content complex																		
children	gmd:portrayalCatalogueCitation																		
used by	complexType MD_PortrayalCatalogueReference_PropertyType																		
attributes	<table border="1"> <thead> <tr> <th>Name</th> <th>Type</th> <th>Use</th> <th>Default</th> <th>Fixed</th> <th>Annotation</th> </tr> </thead> <tbody> <tr> <td>id</td><td>xs:ID</td><td></td><td></td><td></td><td></td></tr> <tr> <td>uid</td><td>xs:string</td><td></td><td></td><td></td><td></td></tr> </tbody> </table>	Name	Type	Use	Default	Fixed	Annotation	id	xs:ID					uid	xs:string				
Name	Type	Use	Default	Fixed	Annotation														
id	xs:ID																		
uid	xs:string																		
source	<pre><xs:element name="MD_PortrayalCatalogueReference" type="gmd:MD_PortrayalCatalogueReference_Type"/></pre>																		

Distribution information (MD_Distribution)

This package supports the provision of metadata about the distributor of, and options for obtaining, a resource.

 Click here to expand...



Metadata extension information (MD_MetadataExtensionInformation)

This package supports the provision of information about user specified metadata extensions.

▼ Click here to expand...

diagram	<pre> classDiagram MD_MetadataExtensionInformation < -- gco:AbstractObject_Type MD_MetadataExtensionInformation < -- gmd:extensionOnLineResource MD_MetadataExtensionInformation < -- gmd:extendedElementInformation MD_MetadataExtensionInformation { attributes id uuid } </pre>																		
namespace	http://www.isotc211.org/2005/gmd																		
type	extension of gco:AbstractObject_Type																		
properties	base gco:AbstractObject_Type																		
children	gmd:extensionOnLineResource gmd:extendedElementInformation																		
used by	element MD_MetadataExtensionInformation																		
attributes	<table border="1"> <thead> <tr> <th>Name</th> <th>Type</th> <th>Use</th> <th>Default</th> <th>Fixed</th> <th>Annotation</th> </tr> </thead> <tbody> <tr> <td>id</td> <td>xs:ID</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>uuid</td> <td>xs:string</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Name	Type	Use	Default	Fixed	Annotation	id	xs:ID					uuid	xs:string				
Name	Type	Use	Default	Fixed	Annotation														
id	xs:ID																		
uuid	xs:string																		
annotation	<p>documentation Information describing metadata extensions.</p>																		
source	<pre> <xs:complexType name="MD_MetadataExtensionInformation_Type"> <xs:annotation> <xs:documentation>Information describing metadata extensions.</xs:documentation> </xs:annotation> <xs:complexContent> <xs:extension base="gco:AbstractObject_Type"> <xs:sequence> <xs:element name="extensionOnLineResource" type="gmd:CI_OnlineResource_PropertyType" minOccurs="0"/> <xs:element name="extendedElementInformation" type="gmd:MD_ExtendedElementInformation_PropertyType" minOccurs="0" maxOccurs="unbounded"/> </xs:sequence> </xs:extension> </xs:complexContent> </xs:complexType> </pre>																		

Application schema information (MD_ApplicationSchemaInformation)

This package supports the provision of metadata describing the application schema used to define and expose the structure of a resource.

▼ [Click here to expand...](#)

diagram	<pre> classDiagram class MD_ApplicationSchemaInformation { id uid gmd:name gmd:schemaLanguage gmd:constraintLanguage gmd:schemaAscii gmd:graphicsFile gmd:softwareDevelopmentFile gmd:softwareDevelopmentFileFormat } MD_ApplicationSchemaInformation < -- gmd:MD_ApplicationSchemaInformation_Type gmd:MD_ApplicationSchemaInformation_Type { attributes id uid gmd:name gmd:schemaLanguage gmd:constraintLanguage gmd:schemaAscii gmd:graphicsFile gmd:softwareDevelopmentFile gmd:softwareDevelopmentFileFormat } </pre>																		
namespace	http://www.isotc211.org/2005/gmd																		
type	gmd:MD_ApplicationSchemaInformation_Type																		
properties	content complex																		
children	gmd:name gmd:schemaLanguage gmd:constraintLanguage gmd:schemaAscii gmd:graphicsFile gmd:softwareDevelopmentFile gmd:softwareDevelopmentFileFormat																		
used by	complexType MD_ApplicationSchemaInformation_PropertyType																		
attributes	<table> <thead> <tr> <th>Name</th> <th>Type</th> <th>Use</th> <th>Default</th> <th>Fixed</th> <th>Annotation</th> </tr> </thead> <tbody> <tr> <td>id</td> <td>xs:ID</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>uid</td> <td>xs:string</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Name	Type	Use	Default	Fixed	Annotation	id	xs:ID					uid	xs:string				
Name	Type	Use	Default	Fixed	Annotation														
id	xs:ID																		
uid	xs:string																		
source	<code><xs:element name="MD_ApplicationSchemaInformation" type="gmd:MD_ApplicationSchemaInformation_Type"/></code>																		

Service metadata information

The a combination of documentation packages used to describe metadata or data services. The structure of service metadata includes three major classes: a section of basic service metadata (SV_ServiceIdentification class) that provides a general description of the service and two sections that describe the operations (SV_OperationMetadata) and data (MD_DataIdentification) available from a particular service.

Extent information (EX_Extent)

The datatype in this package is an aggregate of the metadata elements that describe the spatial and temporal extent of resources, objects, events, or phenomena. The EX_Extent class contains information about the geographic (EX_GeographicExtent), temporal (EX_TemporalExtent) and the vertical (EX_VerticalExtent) extent of something.

▼ Click here to expand...

complexType EX_Extent_Type

diagram	<pre> classDiagram class EX_Extent_Type { <<Information about spatial, vertical, and temporal extent>> <<gco:AbstractObject_Type (extension)>> <<attributes>> id uuid } EX_Extent_Type "1" --> "1" gmd:description EX_Extent_Type "*" --> "0..∞" gmd:geographicElement EX_Extent_Type "*" --> "0..∞" gmd:temporalElement EX_Extent_Type "*" --> "0..∞" gmd:verticalElement </pre>																		
namespace	http://www.isotc211.org/2005/gmd																		
type	extension of gco:AbstractObject_Type																		
properties	base gco:AbstractObject_Type																		
children	gmd:description gmd:geographicElement gmd:temporalElement gmd:verticalElement																		
used by	element EX_Extent																		
attributes	<table> <thead> <tr> <th>Name</th> <th>Type</th> <th>Use</th> <th>Default</th> <th>Fixed</th> <th>Annotation</th> </tr> </thead> <tbody> <tr> <td>id</td> <td>xs:ID</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>uuid</td> <td>xs:string</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Name	Type	Use	Default	Fixed	Annotation	id	xs:ID					uuid	xs:string				
Name	Type	Use	Default	Fixed	Annotation														
id	xs:ID																		
uuid	xs:string																		
annotation	<p>documentation</p> <p>Information about spatial, vertical, and temporal extent</p>																		
source	<pre> <xs:complexType name="EX_Extent_Type"> <xs:annotation> <xs:documentation>Information about spatial, vertical, and temporal extent</xs:documentation> </xs:annotation> <xs:complexContent> <xs:extension base="gco:AbstractObject_Type"> <xs:sequence> <xs:element name="description" type="gco:CharacterString_PropertyType" minOccurs="0"/> <xs:element name="geographicElement" type="gmd:EX_GeographicExtent_PropertyType" minOccurs="0" maxOccurs="unbounded"/> <xs:element name="temporalElement" type="gmd:EX_TemporalExtent_PropertyType" minOccurs="0" maxOccurs="unbounded"/> <xs:element name="verticalElement" type="gmd:EX_VerticalExtent_PropertyType" minOccurs="0" maxOccurs="unbounded"/> </xs:sequence> </xs:extension> </xs:complexContent> </xs:complexType> </pre>																		

Citation and responsible party information (CI_Citation and CI_ResponsibleParty) classes

This package provides a standardized method for citing a resource, as well as information about the party responsible for a resource. Citations use CI_Citation and cite the party responsible by aggregating CI_ResponsiblePartyInfo.

▼ [Click here to expand...](#)

element CI_Citation

diagram	<pre> classDiagram class gmd:CI_Citation_Type { id uuid } class CI_Citation { <<gmd:CI_Citation_Type>> } CI_Citation "1" -- "*" gmd:title CI_Citation "1..∞" -- "*" gmd:alternateTitle CI_Citation "1..∞" -- "*" gmd:date CI_Citation "1..∞" -- "*" gmd:edition CI_Citation "1..∞" -- "*" gmd:editionDate CI_Citation "1..∞" -- "*" gmd:identifier CI_Citation "0..∞" -- "*" gmd:citedResponsibleParty CI_Citation "0..∞" -- "*" gmd:presentationForm CI_Citation "0..∞" -- "*" gmd:series CI_Citation "0..∞" -- "*" gmd:otherCitationDetails CI_Citation "0..∞" -- "*" gmd:collectiveTitle CI_Citation "0..∞" -- "*" gmd:ISBN CI_Citation "0..∞" -- "*" gmd:ISSN </pre>																		
namespace	http://www.isotc211.org/2005/gmd																		
type	gmd:CI_Citation_Type																		
properties	content complex																		
children	gmd:title gmd:alternateTitle gmd:date gmd:edition gmd:editionDate gmd:identifier gmd:citedResponsibleParty gmd:presentationForm gmd:series gmd:otherCitationDetails gmd:collectiveTitle gmd:ISBN gmd:ISSN																		
used by	element formulaCitation complexType CI_Citation_PropertyType																		
attributes	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Name</th> <th>Type</th> <th>Use</th> <th>Default</th> <th>Fixed</th> <th>Annotation</th> </tr> </thead> <tbody> <tr> <td>id</td> <td>xs:ID</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>uuid</td> <td>xs:string</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Name	Type	Use	Default	Fixed	Annotation	id	xs:ID					uuid	xs:string				
Name	Type	Use	Default	Fixed	Annotation														
id	xs:ID																		
uuid	xs:string																		

source

<xs:element name="CI_Citation" type="gmd:CI_Citation_Type"/>

and Another Page

- Overview
- Evolution from ISO 19115
 - Overview of 19115-2 Extensions and Alterations
 - Data Quality
 - Spatial Representation
 - Content information
 - MI_Acquisition
 - Modifications to Data Quality
 - QE_CoverageResult
 - LE_Lineage
 - QE_Usability
 - Spatial Extensions to ISO 19115-2
 - Extension to georectified and georeferenceable classes
 - Ground Control Point Quality
 - Content Information
 - Acquisition Information
 - Acquisition Overview
 - Acquisition Details

Overview

ISO 19115-2, "Geographic information -- Metadata -- Part 2: Extensions for imagery and gridded data" is an extension for ISO 19115 and includes information on data properties, geospatial characteristics, processing and acquisition methods. It is anticipated that features of 19115-2 and 19115-1 may merge at some point in the future.

The ISO 19115-2:2009 standard extends the existing geographic metadata standard by defining the schema required for describing imagery and gridded data. It provides information about the properties of the measuring equipment used to acquire the data, the geometry of the measuring process employed by the equipment, and the production process used to digitize the raw data. This extension deals with metadata needed to describe the derivation of geographic information from raw data, including the properties of the measuring system, and the numerical methods and computational procedures used in the derivation. The metadata required to address coverage data in general is addressed sufficiently in the general part of ISO 19115.

Resource Fact Sheet: http://www.isotc211.org/Outreach/Overview/Factsheet_19115-2.pdf

Evolution from ISO 19115

ISO 19115-2 extends ISO 19115 specifically for imagery and gridded data. These extensions also allow for the documentation of data collected via instrumentation. ***The root of ISO 19115 metadata records will change from MD_Metadata to MI_Metadata when using ISO 19115-2.*** A new section is also added, `gmi:acquisitionInformation` includes the new package, MI_AcquisitionInformation.

Figure 1: and the relationship to MD_Metadata.

Overview of 19115-2 Extensions and Alterations

In comparison with ISO 19115, ISO 19115-2 offers multiple extensions and imagery-specific modifications. These include:

Data Quality

- LI_Source was extended to describe the output of a process step in LE_Source.
- LE_ProcessStepReport was added to identify external information about the processing steps.
- LE_Algorithm is added to describe the methodology used to derive the data from the source data.
- LE_Processing includes LE_Algorithm and adds information to describe the procedure by which the algorithm is applied to generate the product.

- LI_ProcessStep is extended to describe additional information on the history of algorithms used and the processing performed to produce the data in LE_ProcessStep.
- QE_Usability is added to provide specific quality information about a dataset's suitability for a particular application.
- DQ_Result is extended to include information required to report data quality for a coverage in QE_CoverageResult.
- MD_SpatialRepresentation, MD_CoverageDescription, and MD_Format are added to data quality in order to describe the coverage result.
- MX_DataFile is added to identify a complete report of the quality of the coverage.

Spatial Representation

- MD_Georectified is extended to include check point information.
- MD_Georeferenceable is extended to include additional information that can be used to geolocate the data, from MI_GeolocationInformation, in MI_Georeferenceable.

Content information

- MD_Band is extended to define additional attributes for specifying properties of individual wavelength bands in MI_Band.
- MI_RangeElementDescription was added to provide identification of the range of elements used in a coverage dataset.
- MD_ImageDescription is extended to include MI_RangeElementDescription in MI_Image Description.
- MD_CoverageDescription is also extended to include MI_RangeElementDescription in MI_CoverageDescription.

MI_Acquisition

- MI_Operation provides information of the overall data gathering program.
- MI_Platform provides information about the platform from which the data were taken.
- MI_Instrument provides designation of the measuring instruments used to acquire the data.
- MI_Objective describes the characteristics and geometry of the intended object to be observed.
- MI_Requirement details the requirements used to derive the acquisition plan.
- MI_Plan details the implementation. MI_Event describes a significant even that occurred.
- MI_PlatformPass identifies a particular pass made by the platform during data acquisition

See also: [https://geo-ide.noaa.gov/wiki/index.php?title=ISO_19115-2_\(Geographic_Information_%E2%80%93_Metadata_Part_2](https://geo-ide.noaa.gov/wiki/index.php?title=ISO_19115-2_(Geographic_Information_%E2%80%93_Metadata_Part_2)

Modifications to Data Quality

QE_CoverageResult

QE_CoverageResult provides a means to document the quality associated with coverages (as defined by MD_Format).

▼ Click here to expand...

element QE_CoverageResult

diagram	<pre> classDiagram class QE_CoverageResult { id uuid } class gmi:QE_CoverageResult_Type { <<attributes>> id uuid } QE_CoverageResult "1..1" -- "*" gmi:spatialRepresentationType QE_CoverageResult "1..1" -- "*" gmi:resultFile QE_CoverageResult "1..1" -- "*" gmi:resultSpatialRepresentation QE_CoverageResult "0..1" -- "0..1" gmi:resultContentDescription QE_CoverageResult "0..1" -- "0..1" gmi:resultFormat </pre>																		
namespace	http://www.isotc211.org/2005/gmi																		
type	gmi:QE_CoverageResult_Type																		
substitution group	gmd:AbstractDQ_Result																		
properties	content complex																		
children	gmi:spatialRepresentationType gmi:resultFile gmi:resultSpatialRepresentation gmi:resultContentDescription gmi:resultFormat																		
used by	complexType QE_CoverageResult_PropertyType																		
attributes	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Name</th> <th>Type</th> <th>Use</th> <th>Default</th> <th>Fixed</th> <th>Annotation</th> </tr> </thead> <tbody> <tr> <td>id</td> <td>xs:ID</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>uuid</td> <td>xs:string</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Name	Type	Use	Default	Fixed	Annotation	id	xs:ID					uuid	xs:string				
Name	Type	Use	Default	Fixed	Annotation														
id	xs:ID																		
uuid	xs:string																		
source	<pre><xs:element name="QE_CoverageResult" type="gmi:QE_CoverageResult_Type" substitutionGroup="gmd:AbstractDQ_Result"/></pre>																		

XML Schema documentation generated by **XMLSpy** Schema Editor <http://www.altova.com/xmlspy>

LE Lineage

LE Lineage adds additional lineage/quality information relating to:

- Processing and process steps
 - Algorithms
 - Source(s)
 - Geospatial relationships between pixels (nominal resolution)

▼ Click here to expand...

QE_Usability

QE_Usability provides a means to documents the utility of a data entity relative to a user's requirements.

▼ Click here to expand...

Data Quality extended with QE_Usability

element QE_Usability

diagram	<pre> classDiagram class QE_Usability { <<gmi:QE_Usability_Type>> id uuid gmd:nameOfMeasure * gmd:measureIdentification gmd:measureDescription gmd:evaluationMethodType gmd:evaluationMethodDescription * gmd:evaluationProcedure gmd:dateTime * gmd:result 1..2 } </pre>																		
namespace	http://www.isotc211.org/2005/gmi																		
type	gmi:QE_Usability_Type																		
substitution group	gmd:AbstractDQ_Element																		
properties	content complex																		
children	gmd:nameOfMeasure gmd:measureIdentification gmd:measureDescription gmd:evaluationMethodType gmd:evaluationMethodDescription gmd:evaluationProcedure gmd:dateTime gmd:result																		
used by	complexType QE_Usability_PropertyType																		
attributes	<table> <thead> <tr> <th>Name</th> <th>Type</th> <th>Use</th> <th>Default</th> <th>Fixed</th> <th>Annotation</th> </tr> </thead> <tbody> <tr> <td>id</td> <td>xs:ID</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>uuid</td> <td>xs:string</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Name	Type	Use	Default	Fixed	Annotation	id	xs:ID					uuid	xs:string				
Name	Type	Use	Default	Fixed	Annotation														
id	xs:ID																		
uuid	xs:string																		
source	<code><xs:element name="QE_Usability" type="gmi:QE_Usability_Type" substitutionGroup="gmd:AbstractDQ_Element"/></code>																		

Spatial Extensions to ISO 19115-2

Extension to georectified and georeferenceable classes

MI_Georectified (includes information to allow for the geolocation validation of gridded data), MI_Georeferenceable (extends the 19115 class to include information that can be used to geolocate raster imagery) and the associated classes comprise extensions required to specify the spatial representation for imagery and gridded data.

▼ [Click here to expand...](#)

Ground Control Point Quality

Provides information relevant to the quality of GCPs.

▼ [Click here to expand...](#)

Content Information

19115-2 provides extensions to allow for description of the content of imagery and gridded data datasets.

▼ [Click here to expand...](#)

Acquisition Information

Acquisition Overview

Acquisition Overview pertains to the metadata classes required to define the acquisition of imagery and gridded datasets.

▼ [Click here to expand...](#)

element MI_AcquisitionInformation

diagram	<pre> classDiagram class MI_AcquisitionInformation { id uuid } class EOS_AcquisitionInformation MI_AcquisitionInformation "0..∞" -- "gmi:instrument" MI_AcquisitionInformation "0..∞" -- "gmi:operation" MI_AcquisitionInformation "0..∞" -- "gmi:platform" MI_AcquisitionInformation "0..∞" -- "gmi:acquisitionPlan" MI_AcquisitionInformation "0..∞" -- "gmi:objective" MI_AcquisitionInformation "0..∞" -- "gmi:acquisitionRequirement" EOS_AcquisitionInformation </pre>																		
namespace	http://www.isotc211.org/2005/gmi																		
type	gmi:MI_AcquisitionInformation_Type																		
properties	content complex																		
children	gmi:instrument gmi:operation gmi:platform gmi:acquisitionPlan gmi:objective gmi:acquisitionRequirement																		
used by	complexType MI_AcquisitionInformation_PropertyType																		
attributes	<table> <thead> <tr> <th>Name</th> <th>Type</th> <th>Use</th> <th>Default</th> <th>Fixed</th> <th>Annotation</th> </tr> </thead> <tbody> <tr> <td>id</td> <td>xs:ID</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>uuid</td> <td>xs:string</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Name	Type	Use	Default	Fixed	Annotation	id	xs:ID					uuid	xs:string				
Name	Type	Use	Default	Fixed	Annotation														
id	xs:ID																		
uuid	xs:string																		
source	<xs:element name="MI_AcquisitionInformation" type="gmi:MI_AcquisitionInformation_Type"/>																		

XML Schema documentation generated by [XMLSpy](#) Schema Editor <http://www.altova.com/xmlspy>

Acquisition Details

Acquisition Details contains means to document the specific acquisition of imagery and gridded datasets.

v Click here to expand...